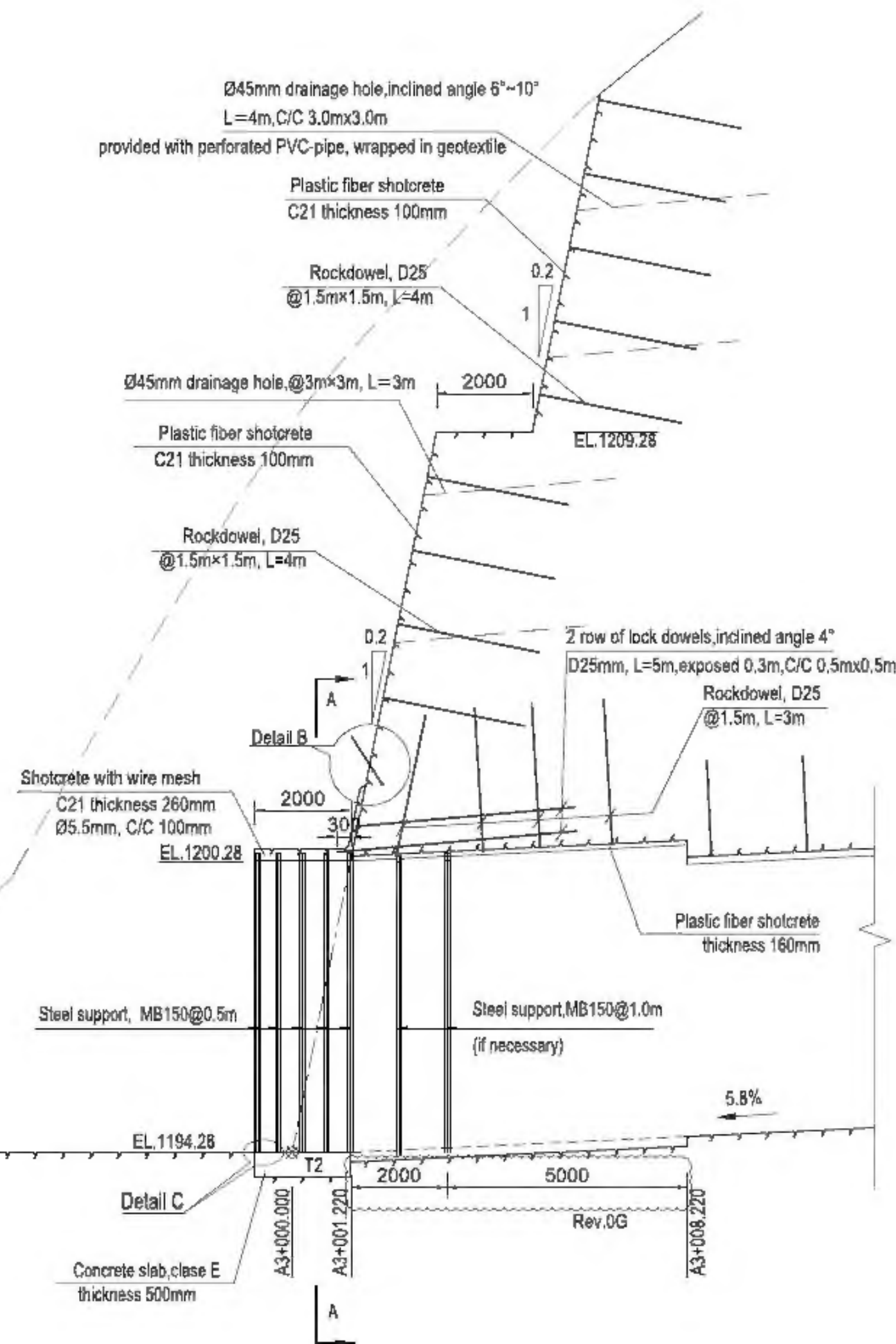
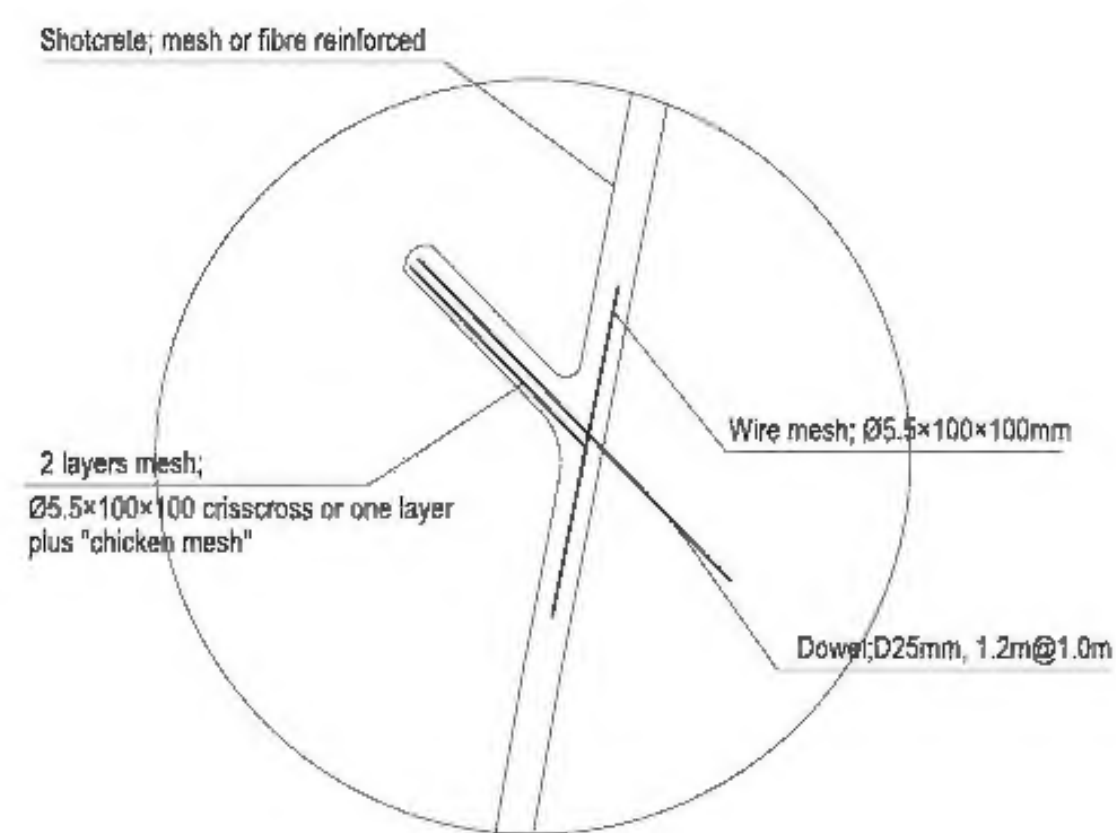


Detail A

SCALE: 1:100

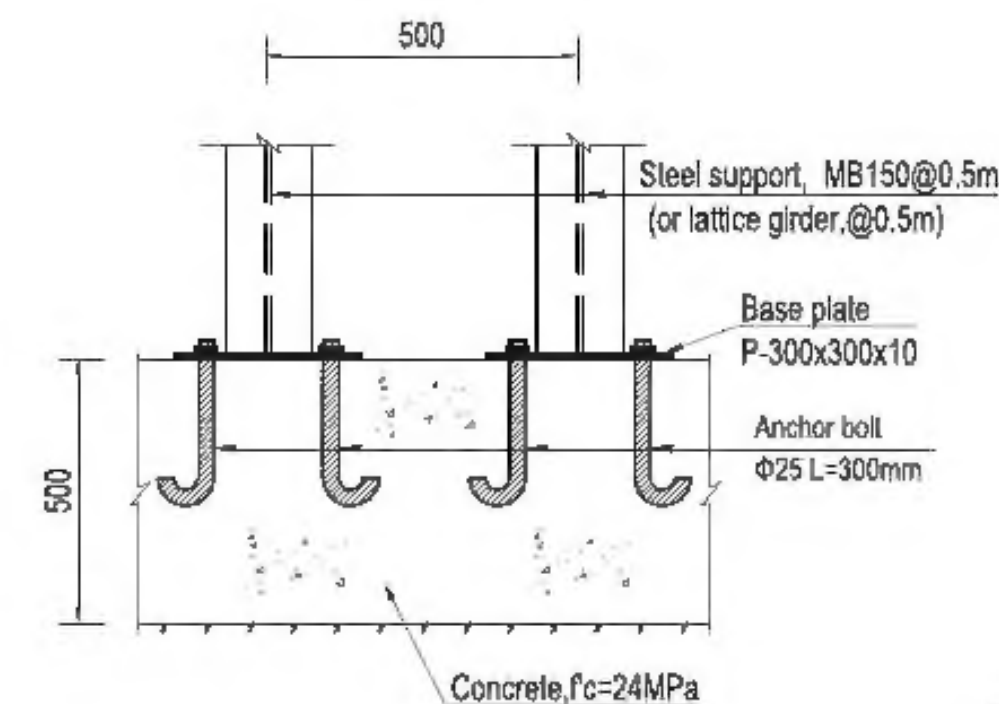


Detail B



DETAIL C

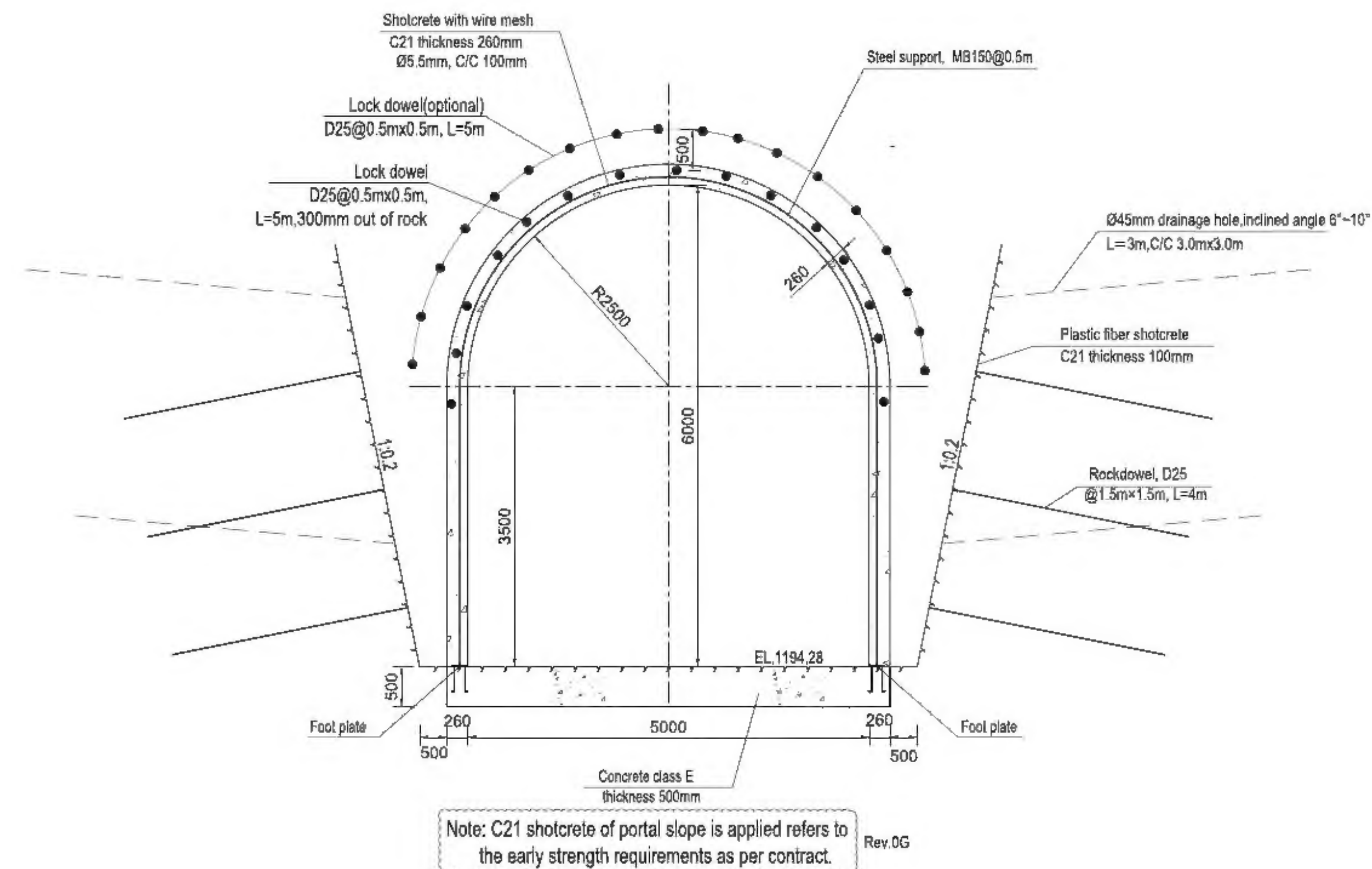
SCALE: 1:50



SCHEMATIC DIAGRAM OF OPEN TUNNEL

(SECTION A-A)

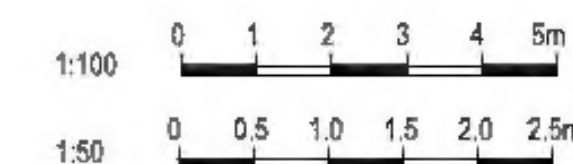
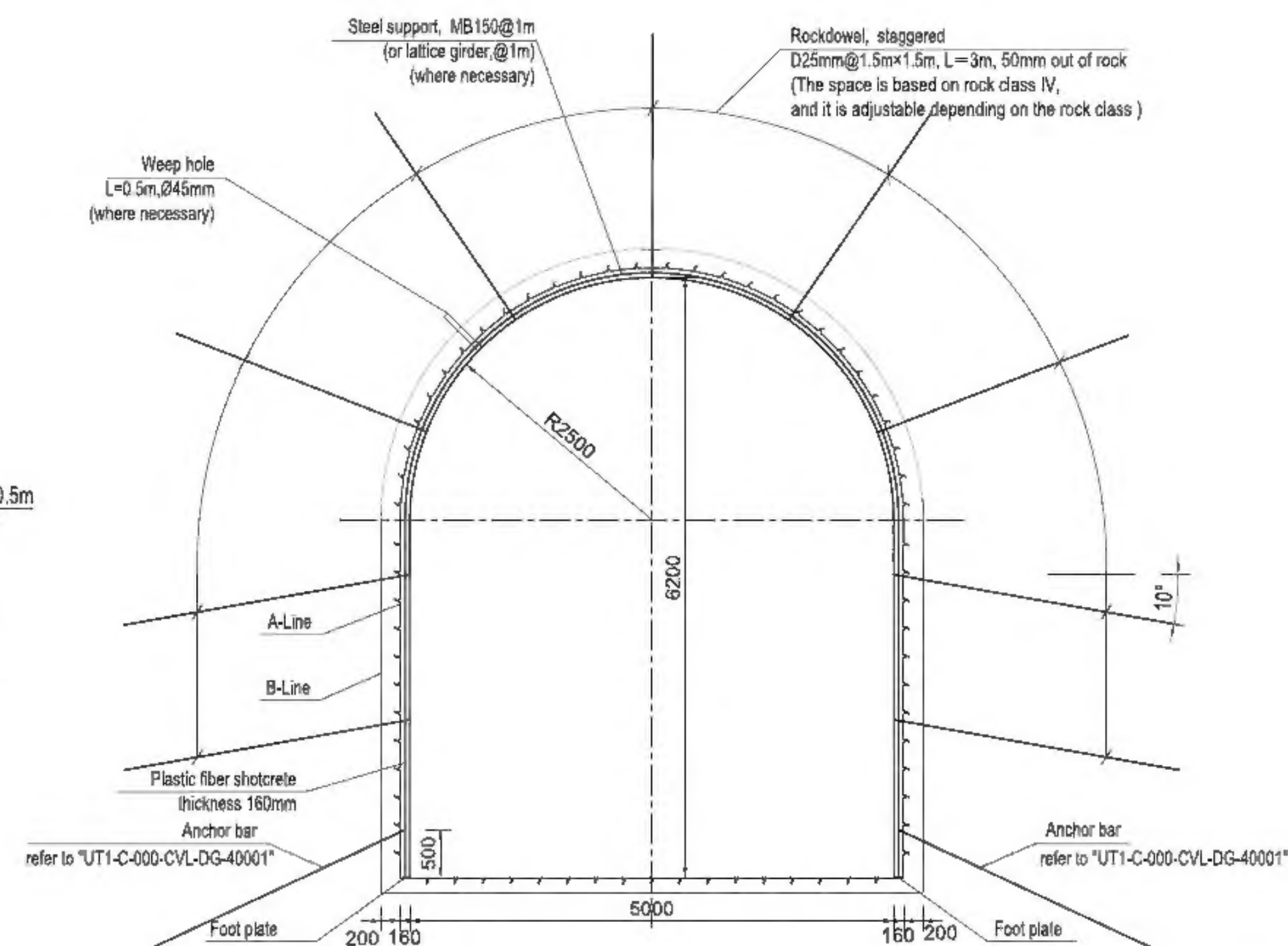
SCALE 1:50



SUPPORT TYPE OF TUNNEL ENTRANCE SECTION

(A3+001.220~A3+008.220)

SCALE 1:50



NOTE

- The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
- Symbol description:
A-Line is the design excavation line.
B-Line is the overbreak line.
R-denotes round bar, yield strength of the round bar is 280MPa.
D-denotes deformed bar, yield strength of the deformed bar is 500 MPa;
- Strength specification of concrete & shotcrete:
(1) Concrete class E: Cylinder specified compressive strength 24MPa at 28 days.
(2) Shotcrete: Cylinder specified compressive strength 25MPa at 28 days unless the slope of the portal. and 1 day aged shotcrete shall have strength above 10MPa as per contract.
- Other notes see sheet 1.

REFERENCE DRAWINGS

UT1-C-150-CVL-DG-43002	Surrounding Rock Stability Calculation of Adit No.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

FOR APPROVAL

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A	25.MAY. 2021	FIRST ISSUE	DONG Z.Z.	Lei Y.G.	Han J.B.

PROJECT TITLE
Upper Trishuli-1 HEP (216MW)

OWNER
NUWEDC
NATIONAL WATER DEVELOPMENT CORPORATION

OWNER'S ENGINEER
TRACTEBEL
JADE CONSULT

CONTRACTOR
DOOSAN Enerbility

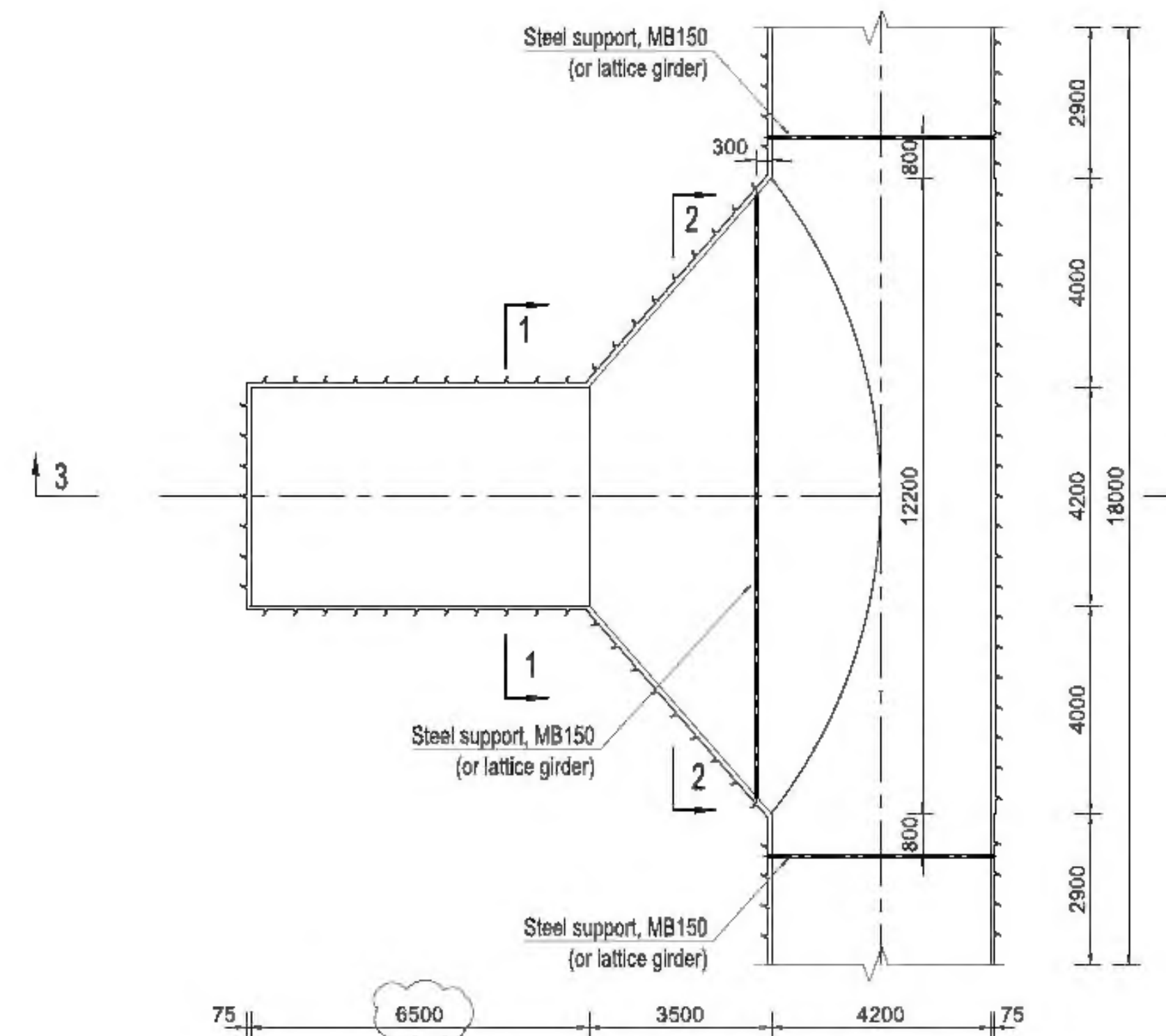
DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS
OF ADIT NO.3 (2/5)

DRAWING NUMBER	SHEET NO.	REV. NO.
UT1-C-150-CVL-DG-43004-2	2 OF 5	G

A1 (594 x 841 MM) 1

PLAN OF TURNING ADIT (ROCK CLASS III)

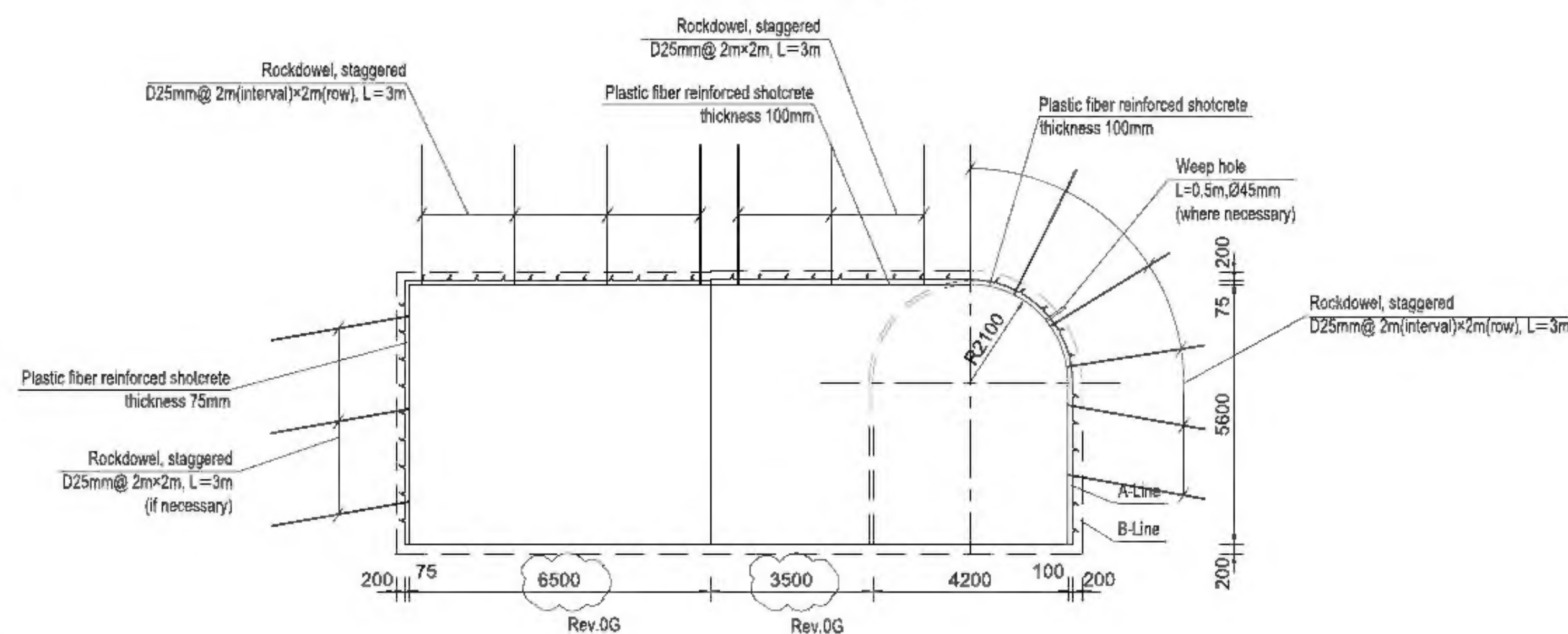
SCALE 1:100



Note: the steel ribs at the start and end of the turning bay are only required in Class III, IV. Rev.0G

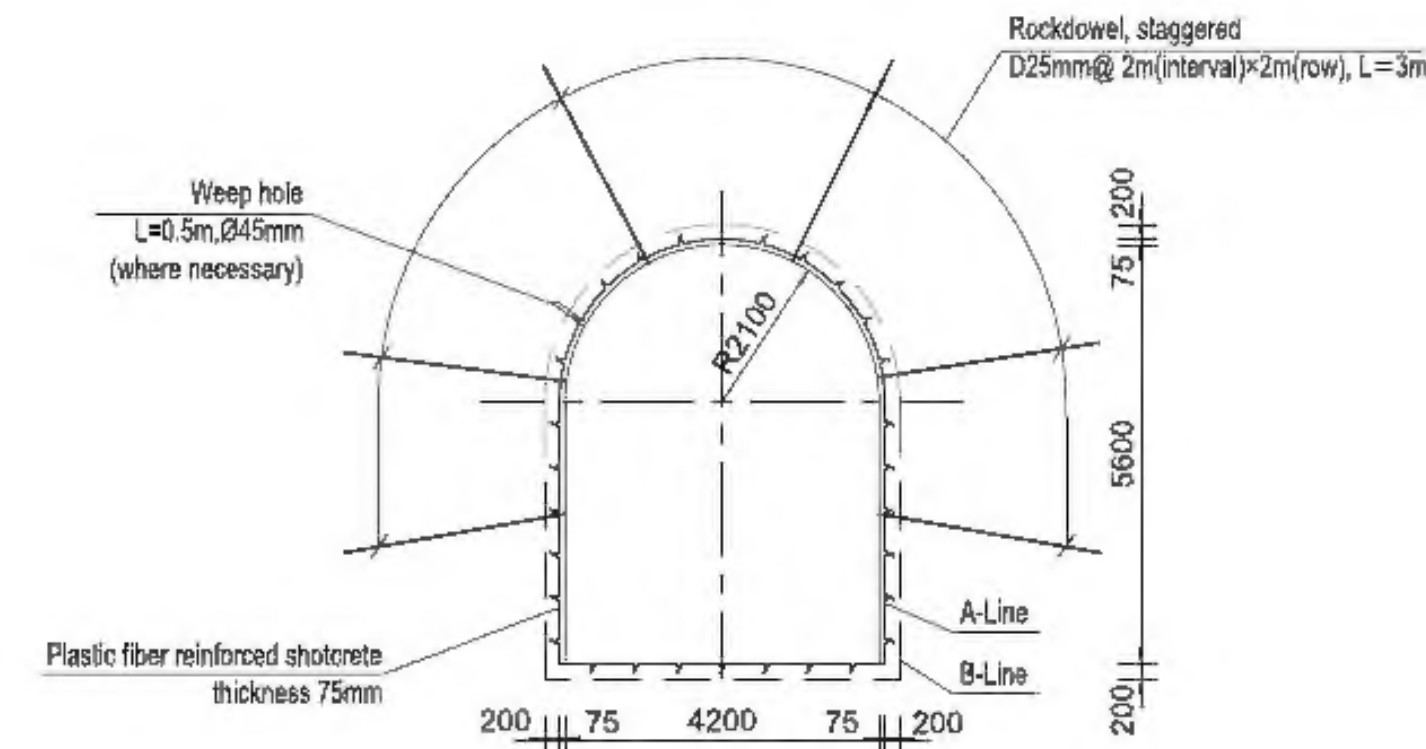
SECTION 3-3

SCALE 1:100



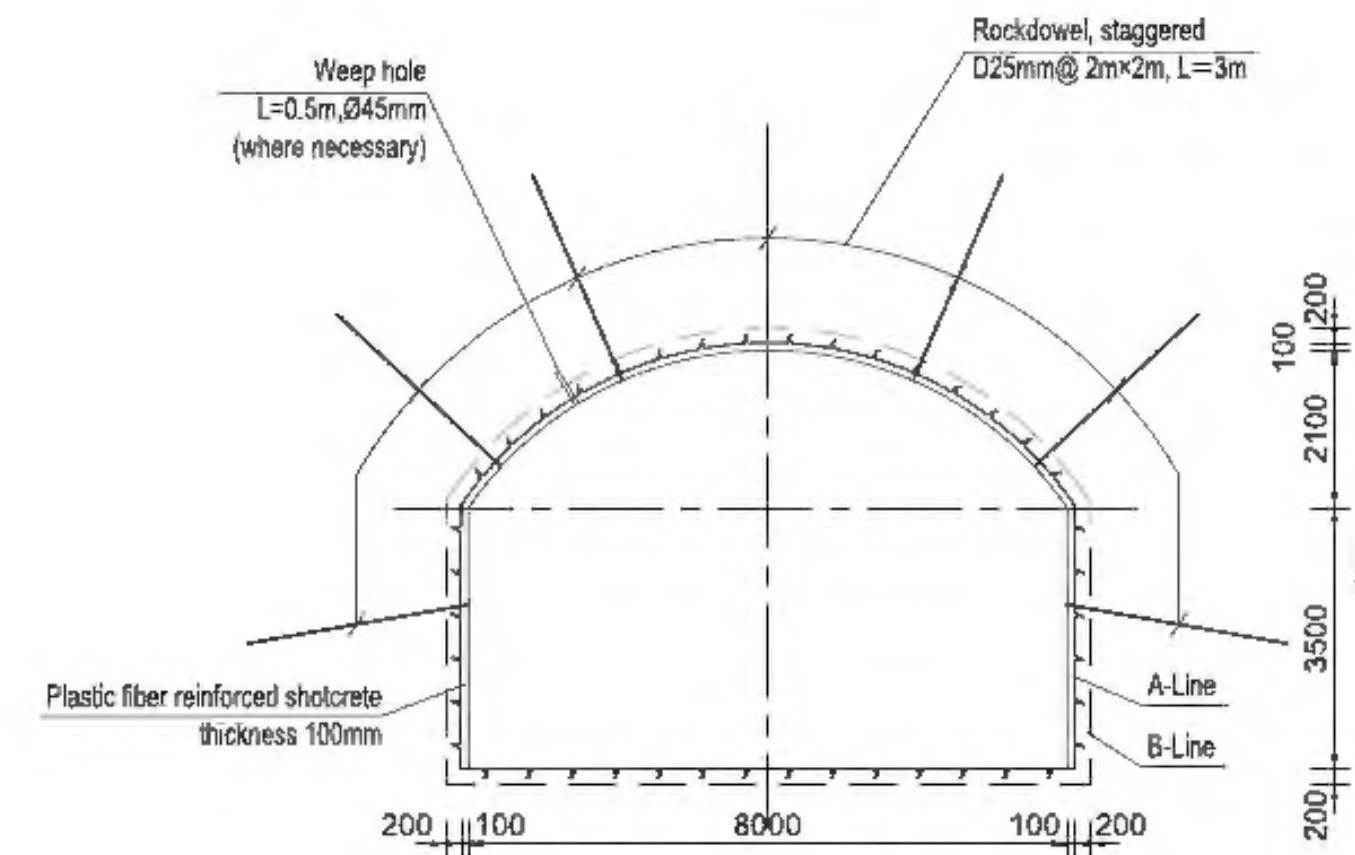
SECTION 1-1

SCALE 1:100



SECTION 2-2

SCALE 1:100



TUNNEL SUPPORT PATTERN

Support pattern	Class I	Class II	Class III	Class IV	Class V
Rock mass quality	$Q > 40$	$10 < Q < 40$	$4 < Q < 10$	$1 < Q < 4$	$Q < 1$
Rock dowel	Spot bolting D25, L=3m (where necessary)	Pattern bolting D25@2.5, L=3m (in tunnel roof)	Pattern bolting D25@2.0m, L=3m (alternative)	Pattern bolting D25@1.5m, L=3m (alternative)	Pattern bolting D25@1.0m, L=3m (alternative)
Shotcrete	--	T=50mm(PFRS)	T=75mm(PFRS)	T=120mm(PFRS)	T=160mm(PFRS)
Steel support	--	--	--	MB150@1.0m or (lattice girder @1m) (where necessary)	MB150@1.0m or (lattice girder @1.0m)
Supplementary support	--	--	--	Forepoling grouted dowel, D25@0.4m, L=6m (where necessary)	Forepoling grouted dowel, D25@0.4m, L=6m
Unsupported span for shotcrete(m)	--	8	2	1.5	0.5~1.0
Unsupported span for rock dowel(m)	--	6	4	3	0.5~1.0
Unsupported span for steel support(m)	--	--	--	0.5~1.0	0.5~1.0
Excavation span(m)	3	3	2	1.0~1.5	0.5~1.0
Excavation method	Blasting/Mechanically				Mechanically

1:100 0 1 2 3 4 5m

NOTE

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2. Other notes see sheet 1 & sheet 2.

REFERENCE DRAWINGS

UTI-C-150-CVL-DC-43002	Surrounding Rock Stability Calculation of Adit No.3
UTI-C-000-CVL-DC-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UTI-C-845-CVL-DC-70005	Layout Drawing of Monitoring for Adit No.3
UTI-C-150-CVL-DC-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

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A	25.MAY. 2021	FIRST ISSUE	DONG Z.Z.	Lei Y.G.	Han J.B.	

PROJECT TITLE

Upper Trishuli-1 HEP (216MW)

OWNER



OWNER'S ENGINEER



CONTRACTOR

DOOSAN Enerbility

DRAWING TITLE

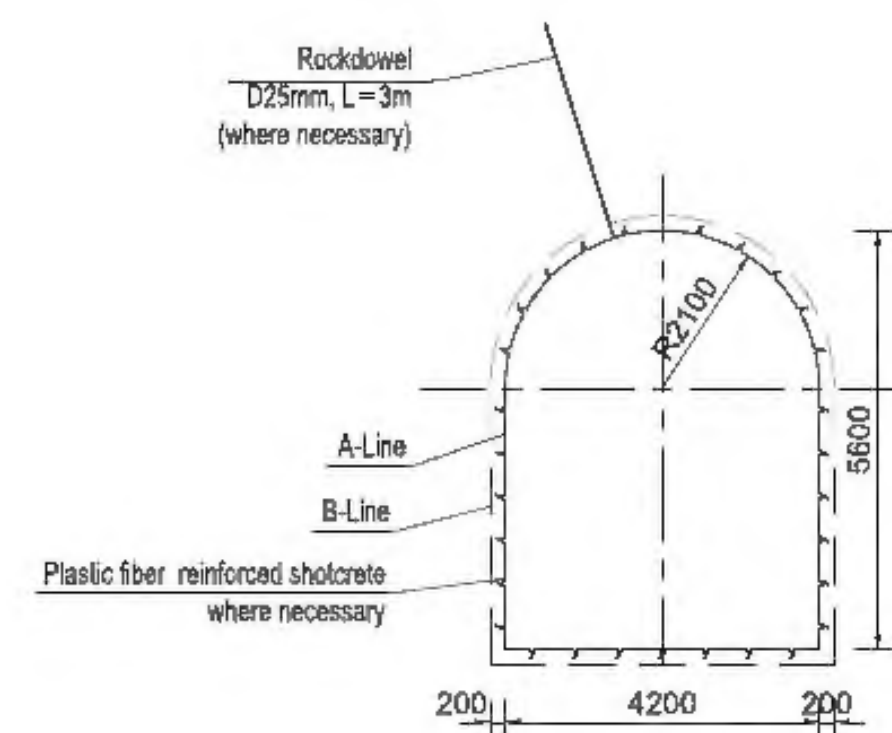
EXCAVATION AND INITIAL SUPPORT DRAWINGS
OF ADIT NO.3 (3/5)

DRAWING NUMBER	SHEET NO.	REV. NO.
UTI-C-150-CVL-DC-43004-2	3 OF 5	G

A1 (594 x 841 MM) 1

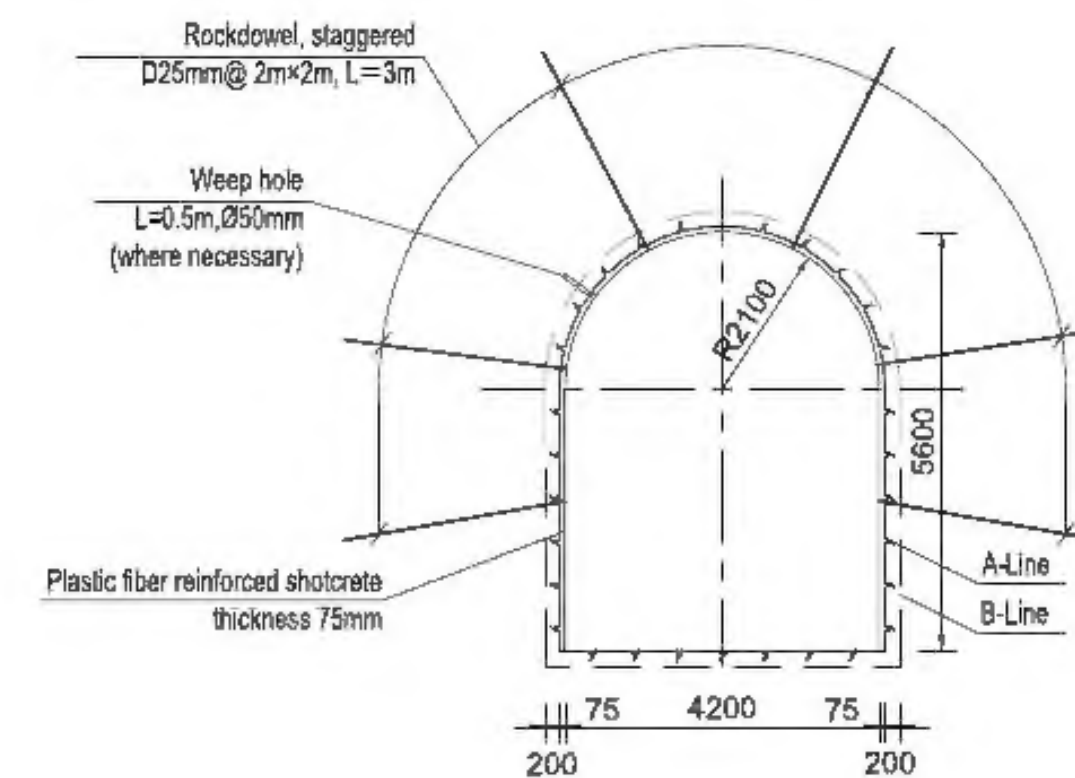
SUPPORT TYPE A OF ROCK CLASS I

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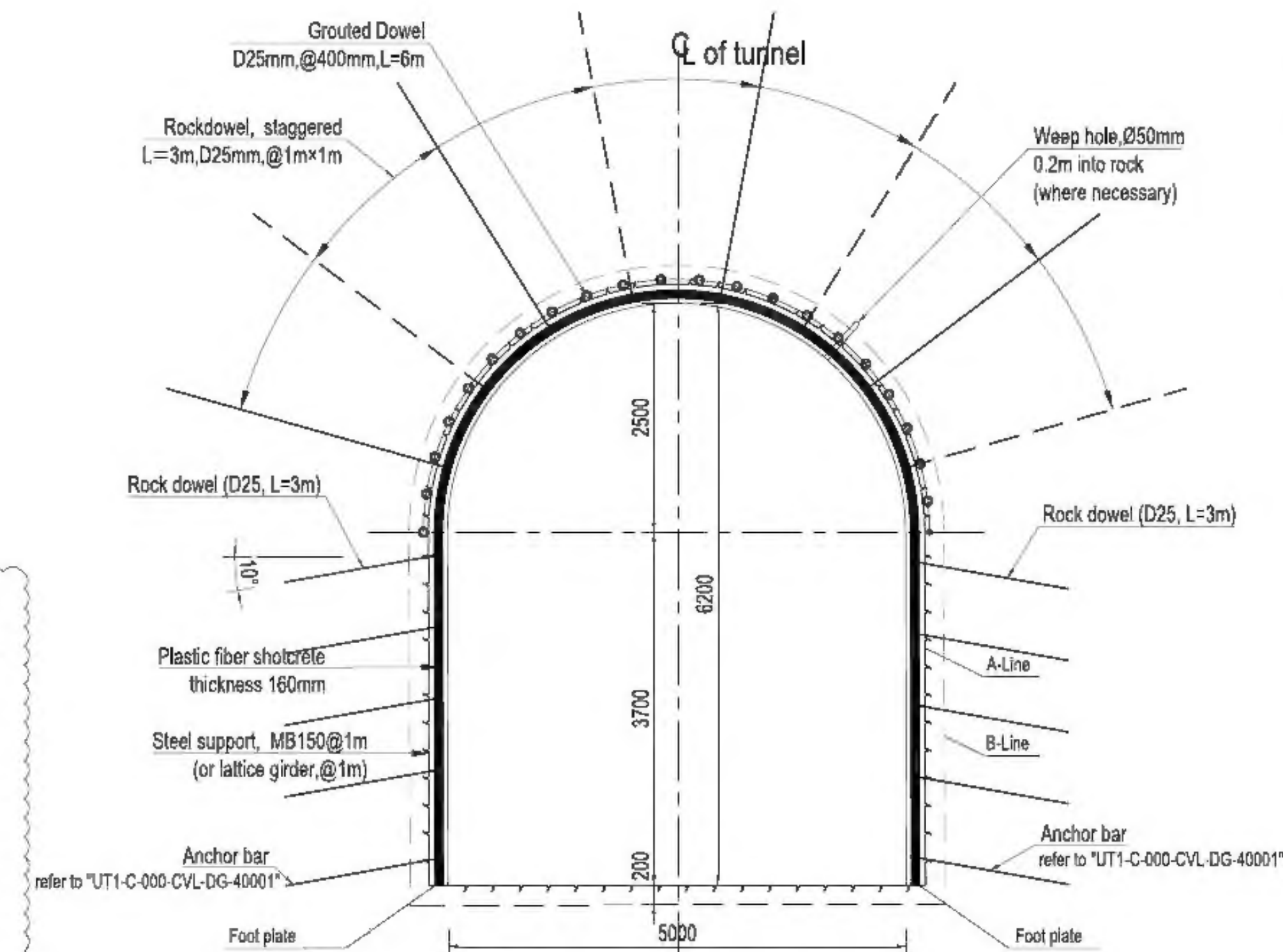
SUPPORT TYPE C OF ROCK CLASS III

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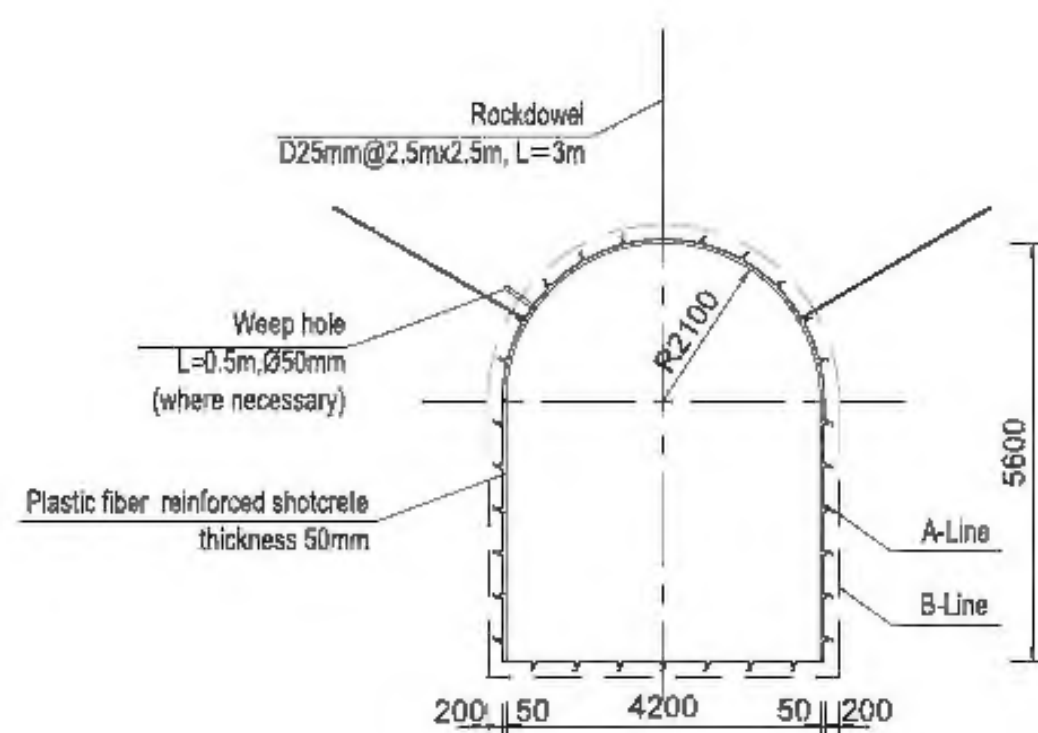
ACROSS SECTION OF FOREPOLING

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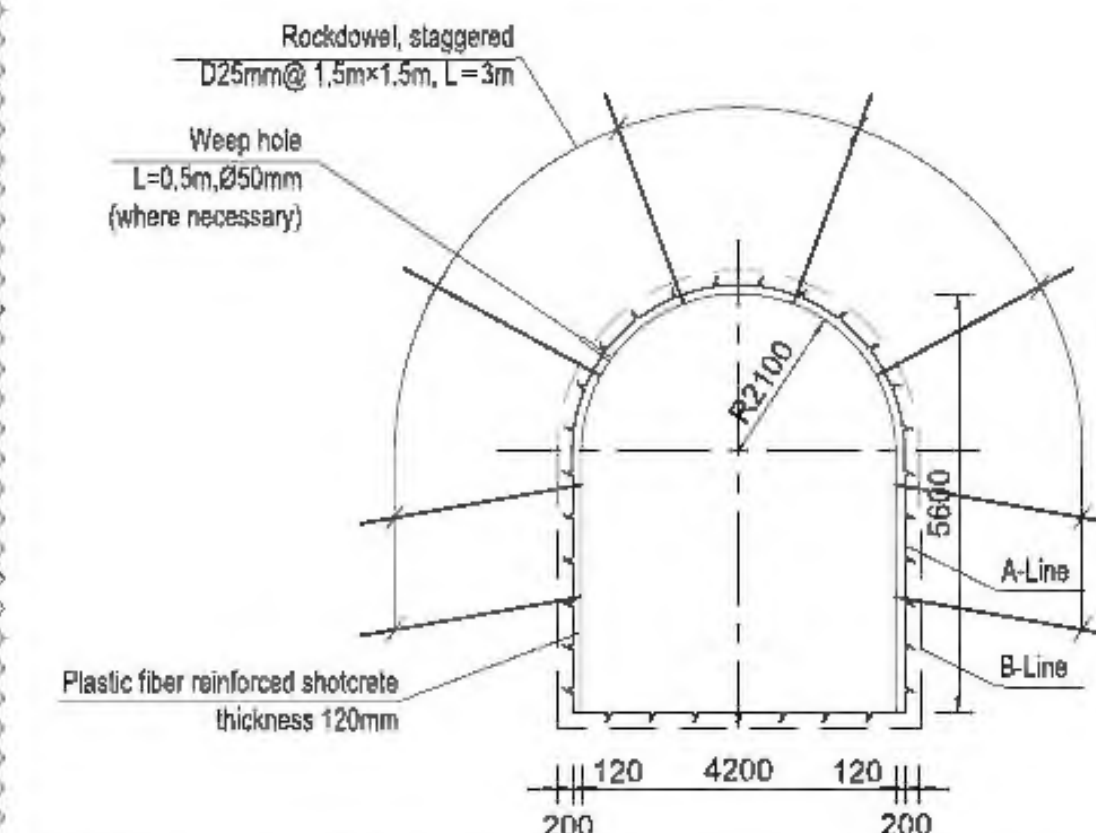
SUPPORT TYPE B OF ROCK CLASS II

SCALE 1:100



SUPPORT TYPE D OF ROCK CLASS IV

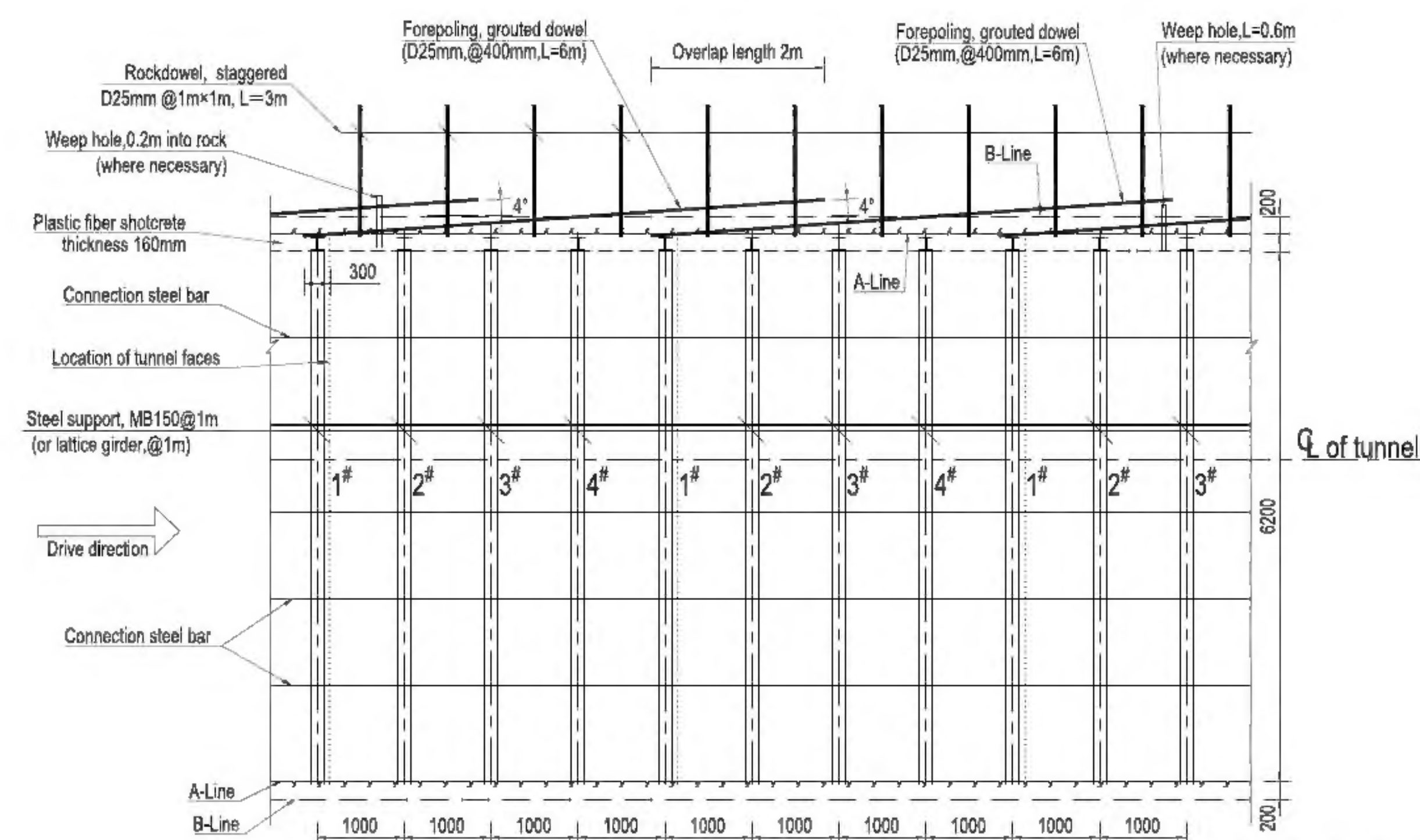
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LONGITUDINAL PROFILE OF FOREPOLING

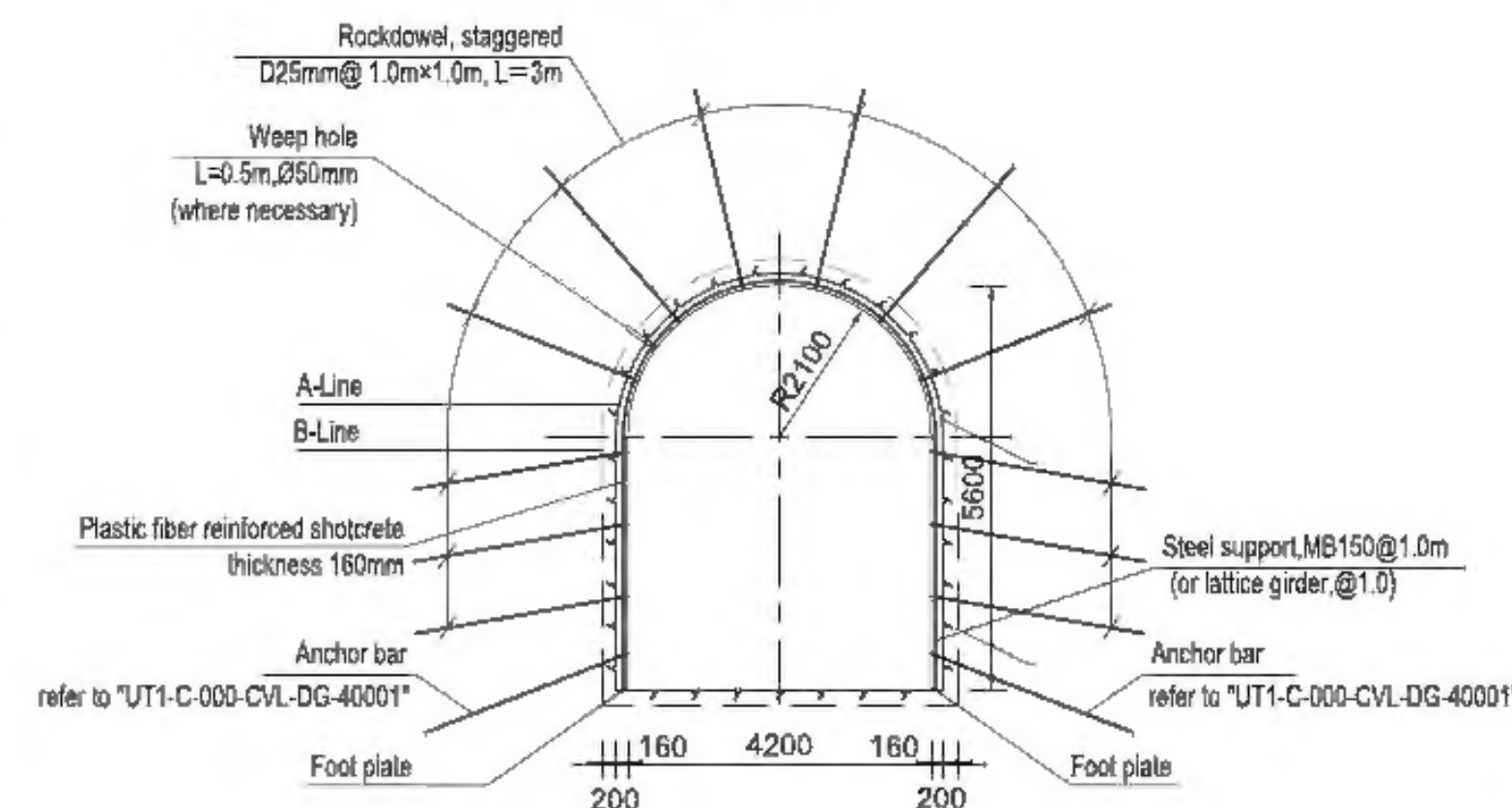
Applied to class V

SCALE 1:50



SUPPORT TYPE E OF ROCK CLASS V

SCALE 1:100



NOTE

1. The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
2. The canopy forepoling is mainly used in the tunnel section with poor surrounding rock geology, which should be used together with dowel and steel support (or lattice girder), and the spacing of dowel should be consistent with that of steel support.
3. The steel support (or lattice girder) to rock class IV is subjected to the exposed geological condition.
4. The excavation profile may need to be adjusted to a "saw-tooth profile" and size of ribs/girders may also be adjusted.
5. Other notes see sheet 1 & sheet 2.

REFERENCE DRAWINGS

UTI-C-150-CVL-DG-43002	Surrounding Rock Stability Calculations of Adit No.3
UTI-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UTI-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UTI-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

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PROJECT TITLE
Upper Trishuli-1 HEP (216MW)

OWNER
NUWEDC
NATIONAL WATER DEVELOPMENT CORPORATION

OWNER'S ENGINEER
TRACTEBEL **jade CONSULT**

CONTRACTOR
DOOSAN Enerbility

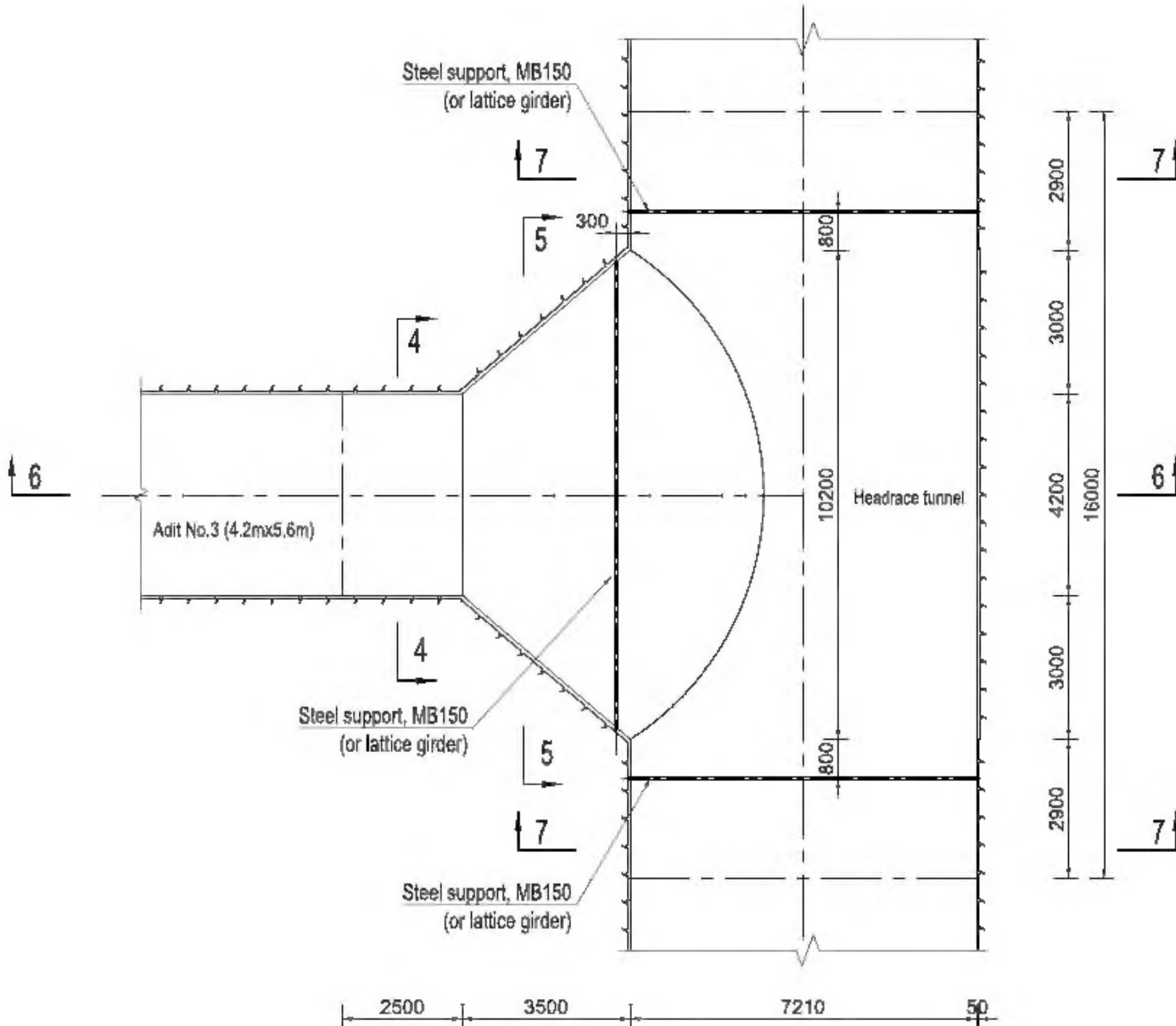
DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS
OF ADIT NO.3 (4/5)

DRAWING NUMBER	SHEET NO.	REV. NO.
UTI-C-150-CVL-DG-43004-4	4 OF 5	G

A1 (594 x 841 MM) 1

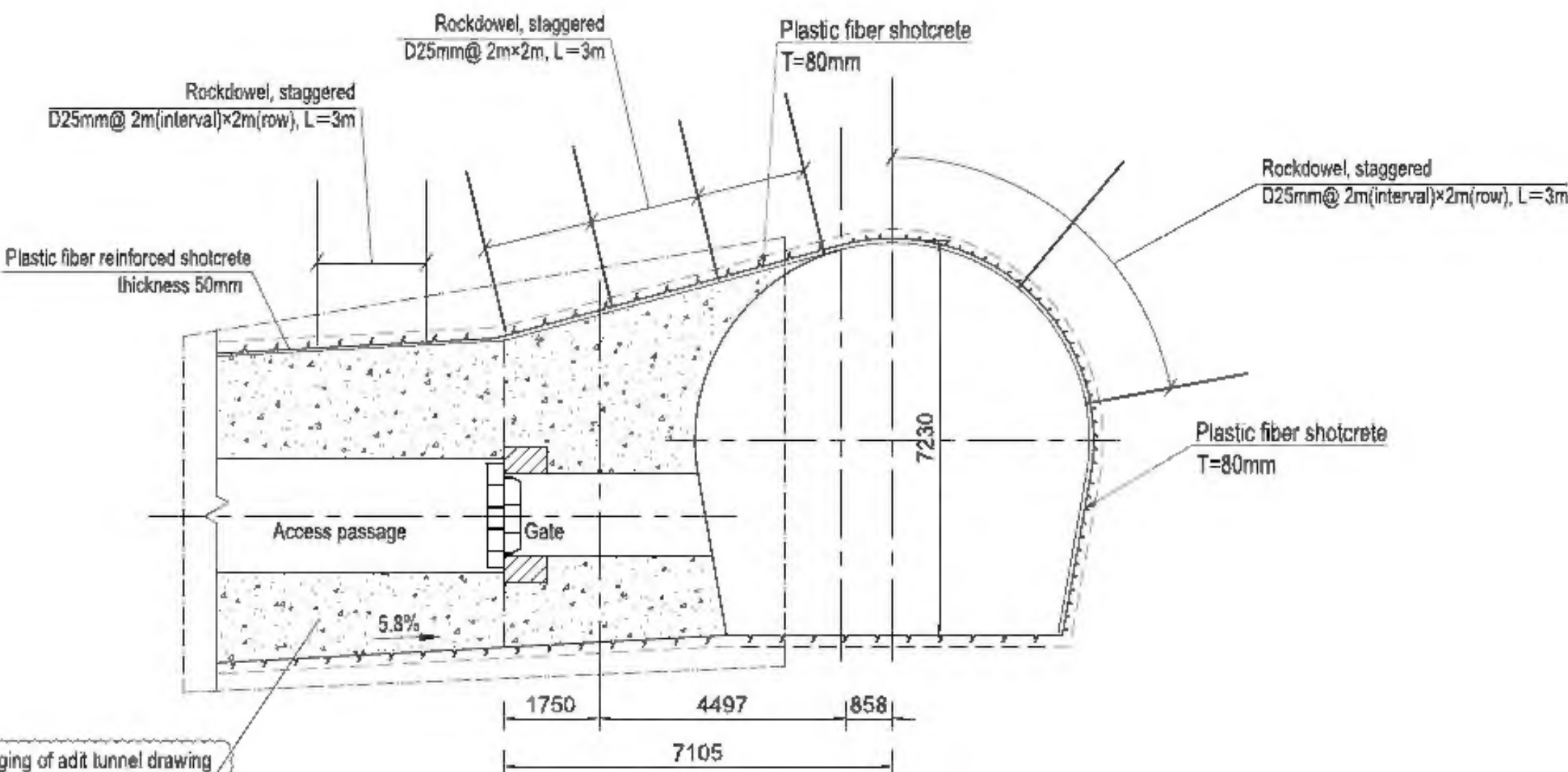
PLAN OF BRANCH OF ADIT NO.3& HEADRACE TUNNEL

SCALE 1:100



SECTION 6-6

SCALE 1:100

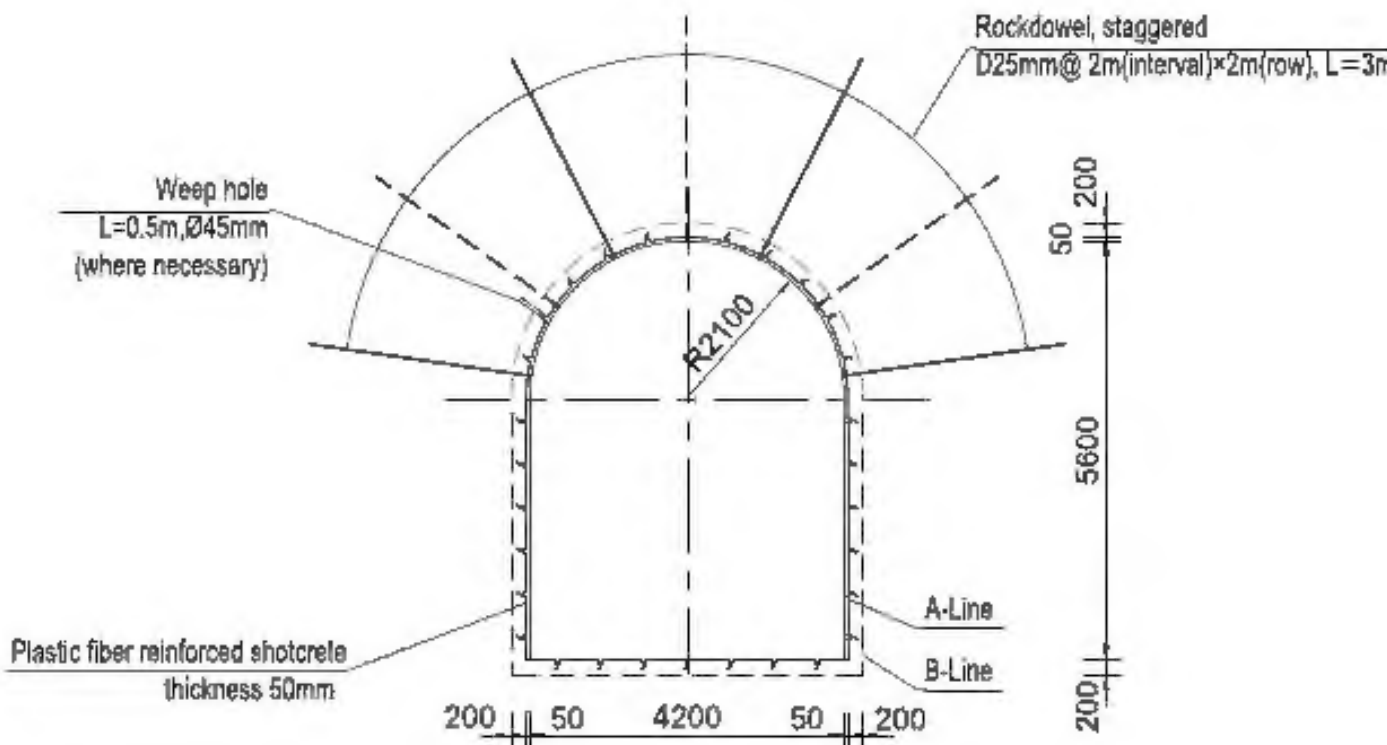


The plugging of adit tunnel drawing in the execution stage, with written approval of the OE.

Rev.0G

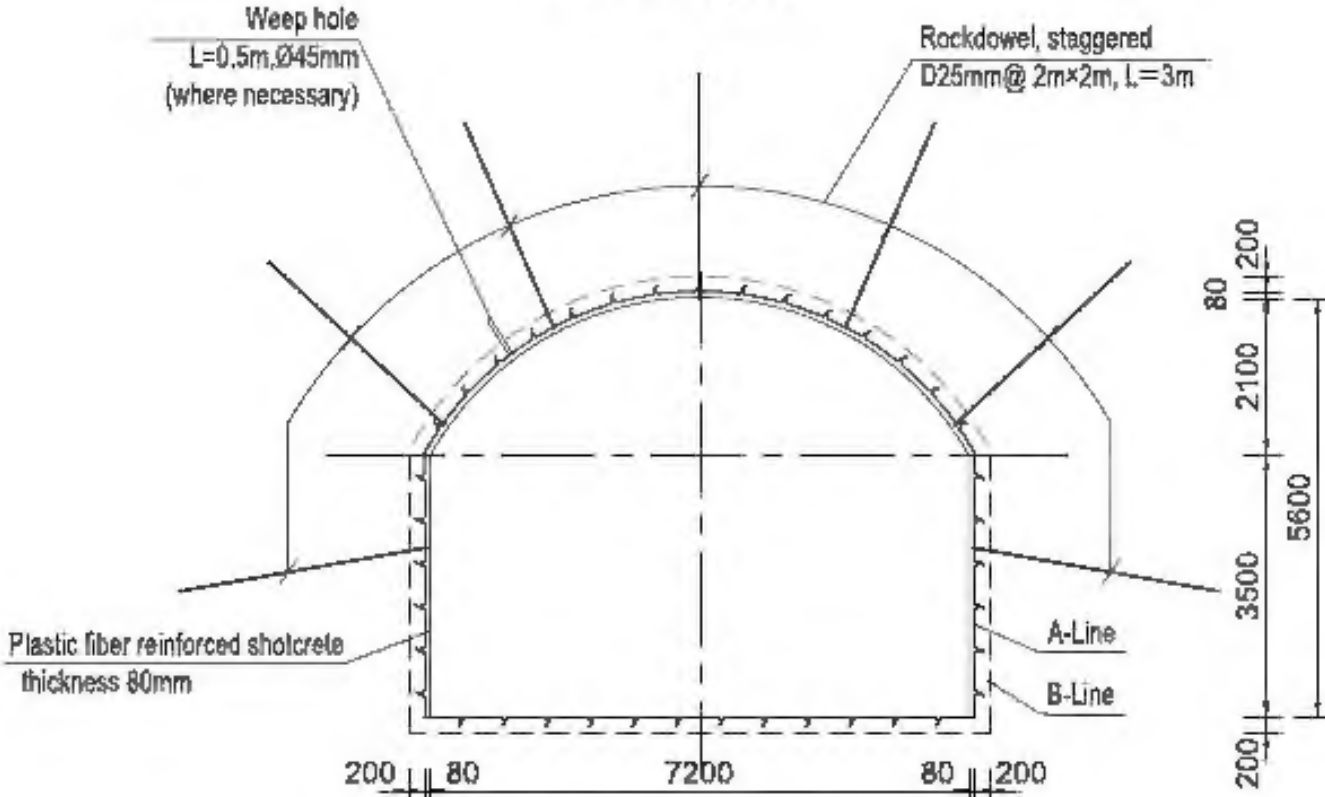
SECTION 4-4

SCALE 1:100



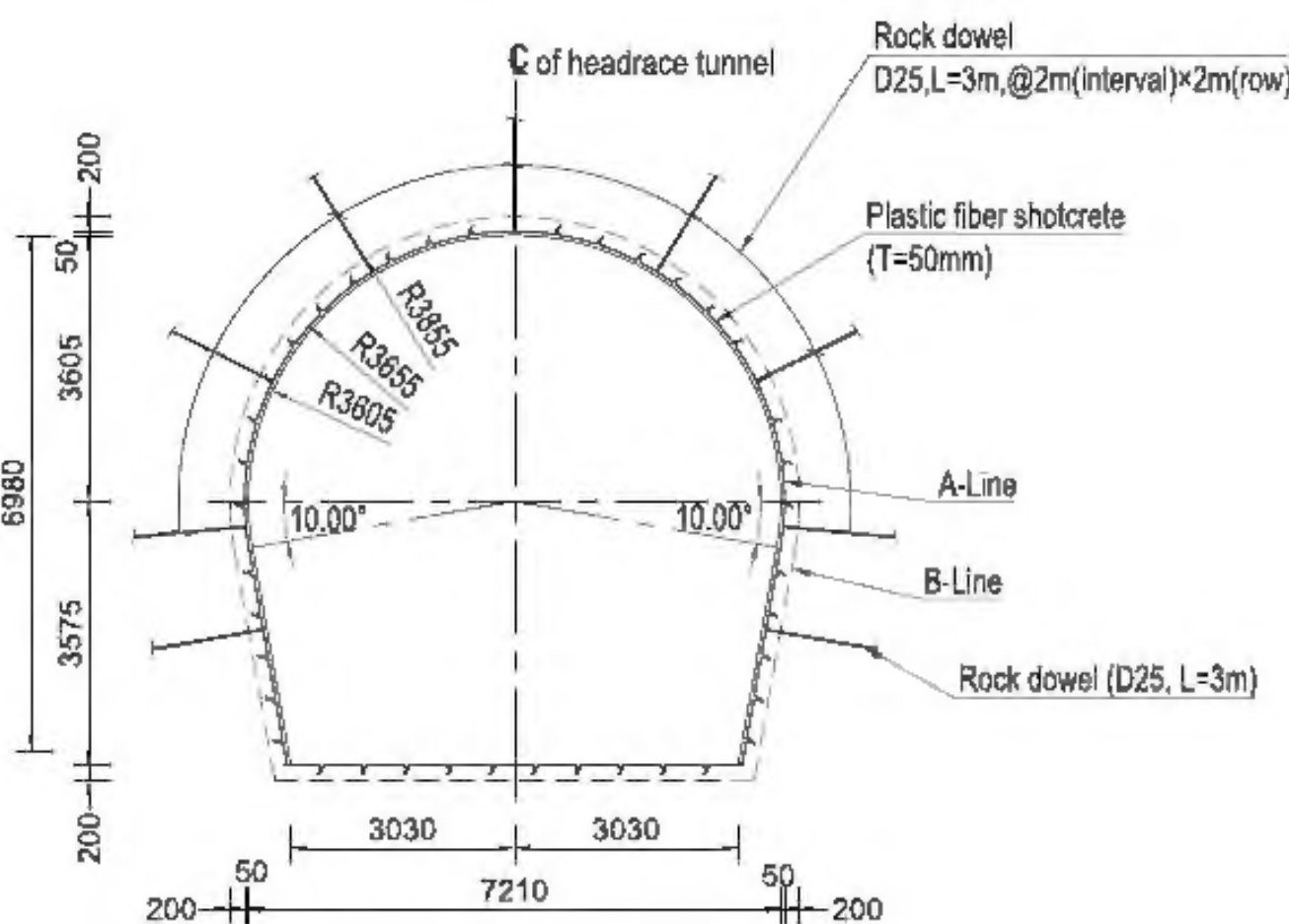
SECTION 5-5

SCALE 1:100



SECTION 7-7

SCALE 1:100



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2. Other notes see sheet 1 & sheet 2.

REFERENCE DRAWINGS

UTI-C-150-CVL-DC-43002	Surrounding Rock Stability Calculations of Adit No.3
UTI-C-600-CVL-DC-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UTI-C-845-CVL-DC-70005	Layout Drawing of Monitoring for Adit No.3
UTI-C-150-CVL-DC-43008	Drawing of construction adit NO.3 plugging

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OWNER'S ENGINEER
TRACTEBEL
ENGRG
jade
CONSULT

CONTRACTOR
DOOSAN Enerbility

DRAWING TITLE
EXCAVATION AND INITIAL SUPPORT DRAWINGS
OF ADIT NO.3 (5/5)

DRAWING NUMBER	SHEET NO	REV. NO.
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A1 (594 x 841 MM)